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Appl. No. 10/539,895
Reply to Office Action of January 19, 2010
Attorney Docket 18064

REMARKS/ARGUMENTS

Claims 1, 2, 5, 8-9, 12, and 14 are currently pending for examination. Claims 1, 8, 12 and 14 are currently amended. Claims 3-4, 7, 10-11 and 13 have been canceled. No new matter has been added.

Interview Summary

Examiner and Applicants discussed the previous rejection on April 15th. While no agreement was reached it was determined that the combination of the features as recited in the dependent claims for a apparatus/manner of controlling the axial loading, particularly on a road grader may overcome the current combination of references.

Rejection of Claims under 35 U.S.C. §103

Claims 1 ~ 5 and 14 were rejected by the previous Office Action under 35 U.S.C. §103 as obvious by U.S. Patent No. 4,580,811 to Wykhuis in view of US Patent 4,664,404 to Schultz. This rejection is respectfully traversed.

Claims 1 recites a road grader having a combined bumper and rear counterweight comprised of a generally flat elongate rear end plate with two configurations that mount to the rear end of the frame of the grader. In a first configuration the rear end plate exhibits a small wall thickness in use with a rear-mounted piece of equipment of a high weight. In a second configuration a rear end plate exhibits a greater wall thickness in use with a rear-mounted piece of equipment of a low weight or without any rear-mounted equipment. There are openings within each bumper for the lighting. In both configurations the rear end plate form the rearmost part of the frame and are similarly mounted directly above the piece of

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equipment attached to the frame such that an axle load distribution of the grader is maintained, by applying generally the same force to the frame at a similar location in both the first and second configurations, as shown by example in Figure 1. The inventors have gone to great lengths to generally maintain the load distribution within an easy to install design to the extent that even the positioning of the lights are taken into account with inside the body of each one bumper assembly

None of the prior art references show using replacement bumper configurations directly above an attachment of a road grader to avoid discrepancies in the axial loading. Consistent axial loading is particularly important for a road grader, as they are tasked with setting precisely the contour of the ground, to optimize the axle load distribution between the front axle and the rear tandem axle, which is one of the reasons the bumper is raised up into the rear frame. There is much less room for error in a counterweight system that can be used on a grader than one only intended for applicability to most tractor applications. Wykhuis shows a rear counterweight assembly for a vehicle with an implement mounted to its forward end. The counterweight is incorporated into the rear bumper assembly and includes rectangular weights having notched lower edges that can be received on bumper mounting rods that are received in holes in the rear of the vehicle. Wykhuis does not discuss alternatively using a first plate or a second plate, rather to maintain an axial load at a specific point based on the presence or absence of rear mounted equipment located at the same point on the frame. Wykhuis instead adds or subtracts additional plates, mounted behind the bumper and extending out from the frame, to counterbalance a weight, mower etc mounted at the opposite of the frame.

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This arrangement of Wykhuis does not maintain a similar axial load on the frame as the placement of the elements are not aligned.

Schultz shows a rear weight and hitch assembly where an implement is attached rearward of a counterweight assembly. Similarly to Wykhuis, multiple weights are added or subtracted to achieve a desired counter weight. Individual weight assemblies are not keyed to correspond with the presence or absence of a particular attached implement at essentially the same loading location upon the frame. The weights in Schultz are located within a support assembly distanced from the attachment point of the implement so as not to interfere with hitch operations and do not form the rearmost part of the frame or both serve separately as a bumper of the vehicle. It would also not be obvious to combine these references as Schultz is particularly concerned with and mentions several times that the counter weights are to be located on an inward portion of the vehicle, and not at its rear most portion so as not to interfere with the hitch assembly. Schultz notes in the background, that it is possible for the rear axle to become overloaded, particularly during transport, when an implement such as a backhoe loader is attached. No steps to address this issue are discussed regarding alleviating the overloading, or the importance of generally maintaining an axial load on the frame. One possible and maybe likely solution of Schultz could be removing all of the weight, which would not be possible if it was operating as a bumper assembly.

Additionally, Schultz does not show a light mounting configuration. Wykhuis shows placing the rear lights within an elastomeric bumper structure rather than within the body of the counterweight such that the lights do not extend beyond the

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weight. Wykhuis doesn't offer as secure of protection for the lights against damage or destruction as they are located within a softer bumper structure rather than protected by the counterweight rear end plate and further are not consistent with reducing the variation in loading on the frame as their position changes based on the number of attached weights. In Wykhuis, the same soft bumper structure/end portion 28 houses the lights 32 regardless of how much weight is desired to be applied. Wykhuis does not show separate structures through which the lights can extend.

While some of the elements discussed in the claims may be shown in the prior art it would be impermissible hindsight to combine them together in the manner discussed above for the purposes of maintain an axle load distribution on the grader as that intent or teaching was not discussed in the cited references. As neither Wykhuis or Schultz show alone or in combination maintaining a generally constant axially load upon the frame of a grader alone by having counter weight end plate bumpers of varying weights keyed to the presence or absence of an implement mounted to the frame at a similar location, removal of this rejection is requested.

Claim 14 recites the steps of removing a first rear end plate having a first weight and first wall thickness from an end of the grader, attaching a rear mounted piece of equipment to the end of the grader; and attaching a second end plate having a second weight less than the first weight and a second thickness less than the first wall thickness to the end of the grader as a method for maintaining an axle load distribution in conjunction with the attachment of an implement.

As noted above Wykhuis and Schultz do not recite two distinct rear end plates

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that serve as both a bumper and a counterweight, each usable independent of the other depending on the attachment and type of equipment mounted to the frame. In both Wykhuis and Schultz multiple counterweights of similar weights are added or subtracted from the vehicle to achieve a particular loading. Neither shows using the weight of the bumper, located at the rear most part of the vehicle, to maintain the axial loading on the frame, such that the operation of the grader is not affected. As neither reference shows using separate rear end plate/ bumpers based on whether equipment is similarly mounted to a frame, removal of this rejection is requested.

As the prior art references do not show all of the limitations of claims 1 or 14 removal of the rejections is requested.

Claims 2 and 5 depend directly from claim 1 and are allowable for at least the same reasons as claim 1. Accordingly, allowance of claims 2 and 5 is respectfully requested.

Claims 8-9 and were rejected under 35 U.S.C. §103 as obvious by U.S. Patent No. 3,853,231 to Luttrell in view of Schultz

Claim 8 recites a road grader having a generally flat elongate rear end plate jointed to the rear end of frame. The rear end plate constitutes the rearmost part of the rear frame and extending generally the width of the road grader. The rear end plate further has apertures to improve the travel of rear-mounted ground engaging equipment mounted to the frame of the grader through a portion of the plate.

In contrast, Luttrell discloses a work vehicle having a front ground engaging blade and a rear counterweight that is removably insertable into an opening in the vehicle frame. A second counter weight bumper is then secured over the opening which houses the first counter weight by fasteners. Luttrell does not discuss

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mounting different counterweights to the same portion of a frame based on the inclusion of a rear mounted ground engaging implement. Luttrell instead relates to a loader, which typically does not perform leveling to the degree of preciseness achieved by road graders, making the axial loading on the frame less critical. Commonly a road grader is used after a loader to further establish the grade.

Luttrell further does not disclose or suggest mounting a thinner rear plate based on the weight of a removable ground engaging equipment to improve the axle load distribution in addition to the implement. Luttrell instead uses the bumper 48 to hide a second weight 35 that can be placed within the frame of the vehicle. As noted by the Examiner, Luttrell does not show any cutout portions to be used for a piece of ground engaging equipment located below the bumper such that it may pass through a portion of the bumper when raised. This feature allows the bumper counterweight to be maintained in position above the ground engaging implement, such that the axial loading on the frame will be similar. Similarly, cut outs are all placed in the bumper for the lights to extend through so as to further maintain the position of the forces. These features are not described or suggested in Luttrell, as the second counter weight is placed in a different position and dissimilarly applies a load to the frame. Wykhuis, as previously discussed in detail, also does not show all of the recited features.

Schultz as discussed above shows a counterweight assembly of uniform size. The counterweights have a cut out portion such that a cylinder mounted to the platform holding the counterweights can move rearwardly through a portion of the counterweights. Schultz does not show a first rear mounted piece of ground engaging equipment mounted to the rear frame directly below the first rear end plate

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and the first rear end plate having openings therethrough along a bottom edge of the plate to allow rear-mounted equipment to pass from a position below the first rear end plate through a lower portion of the first rear end plate. Schultz shows both a drawbar 61 used for towing equipment, and a three point hitch (79, 87, 88, 89) typically used for manipulating a rear mounted piece of equipment. The attachments point of the drawbar 61 and the hitch are located rearward of the weights and not located directly below the plate for axially load purposes. It would not be likely that on commonly used equipment that a portion of the equipment would extend to underneath of the weights, and if it did could not likely pass through the weights as they are supported upon shelf 23. The cylinder 52 is located rearward of the weights and not directly beneath them is part of the hitch, which, is typically viewed as part of the tractor and not as a portion of ground engaging equipment. As neither reference shows alone or in combination with the other references all of the claimed elements, removal of this rejection is requested.

Neither Luttrell, Schultz nor Wykhuis show a rear end plate forming counterweight rear bumper that has a cutout to permit travel of a portion of ground engaging implement and a separate rear counterweight bumper to use when the ground engaging implement is not needed to maintain the general axial load on the frame.

Claim 9 depends from claim 8 and is allowable for at least the same reasons as claim 8. Accordingly, allowance of claims 9 is respectfully requested.

Claims 10, 11 and 13 were rejected by the previous Office Action under 35 U.S.C. §103 as obvious in view of Luttrell and Schultz and in further view of Wykhuis.

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Claims 10, 11, and 13 have been canceled making this rejection moot. Their previous limitation rejections are addressed to the extent they have been incorporated into the preceding claims.

Claim 12 was rejected by the previous Office Action under 35 U.S.C. §103 as obvious in view of Luttrell in further view of Wykhuis and Schultz and in further view of U.S. Patent 3,490,787 to Latterman.

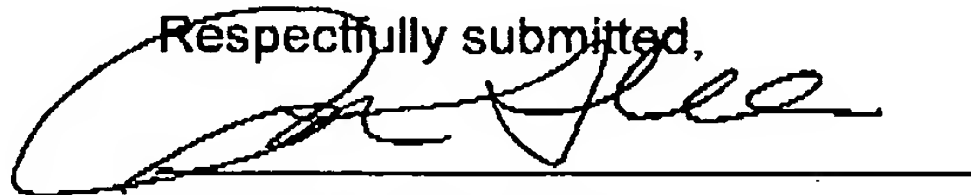
Claim 12 depends from claim 8 and is allowable for at least the same reasons as claim 8.

Conclusion

It is submitted that claims 1, 2, 5 and 8,9,12 and 14 define patentable subject matter. A Notice of Allowance is therefore respectfully requested.

No fee is believed due with this communication. Nevertheless, should the Examiner consider any fees to be payable in conjunction with this or any future communication, authorization is given to direct payment of such fees, or credit any overpayment to Deposit Account No. 14-0780. The Examiner is invited to contact the undersigned by telephone if it would help expedite matters.

Respectfully submitted,



Patrick M. Sheldrake
Attorney for Applicant(s)
Reg. No. 60,411
Date: April 19, 2010

(717) 355-4954 Phone
(717) 355-3107 Fax